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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,247	10/28/2003	Yee Loong Chin	70030429-1	7045

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EXAMINER

MONBLEAU, DAVIENNE N

ART UNIT	PAPER NUMBER
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2878

DATE MAILED: 06/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/696,247

Applicant(s)

CHIN ET AL.

Examiner

Davienne Monbleau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4, 5, 16, 25, and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Burrowes et al. (U.S. 4,587,513).

Regarding Claim 1, *Burrowes* discloses in Figure 1 a reflective imaging encoder comprising an emitter (16) emitting light, a diffuse reflective coder (15) reflecting light from the emitter (16), an imaging lens (20) forming an inverted imaging of the reflected light from the coder (15), and a detector (22) receiving the inverted image from the imaging lens (20).

Regarding Claim 2, *Burrowes* discloses in Figure 1 that the coder (15) is a code wheel.

Regarding Claim 4, *Burrowes* discloses in column 4 lines 8-9 that the emitter (16) is a light emitting diode.

Regarding Claim 5, *Burrowes* discloses in Figure 1 that the LED is an unencapsulated LED.

Regarding Claim 16, *Burrowes* discloses in Figure 1 that imaging lens (20) is separate from the detector (22).

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Regarding Claim 25, *Burrowes* discloses in Figure 1 that the detector (22) comprises an array of photodiodes (i.e. photodetectors).

Regarding Claim 26, *Burrowes* discloses in Figure 1 that the detector (22) is mounted on the optical axis of the imaging lens (20).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 15, 23, 24, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burrowes.

Regarding Claim 15, *Burrowes* teaches in Figure 1 that said emitter (16) is an LED, but does not teach using a plurality of LEDs. It would have been obvious, however, to one of ordinary skill in the art at the time of the invention to use an particular light source or

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arrangement thereof in *Burrowes*, to optimize cost, efficiency, signal output, or any other desired characteristic.

Regarding Claims 23 and 24, *Burrowes* teaches in Figure 1 that the coder (15) has two separate areas (15a, 15b) with different reflective optical properties, but does not teach specifically the pattern on each area. It would have been obvious, however, to one of ordinary skill in the art at the time of the invention to use a particular arrangement of reflective bars, transparent slots, dark code strips, etc., in *Burrowes* to provide a coder with particular characteristics and resolution.

Regarding Claim 27, *Burrowes* does not teach a light baffle. It would have been obvious, however, to one of ordinary skill in the art at the time of the invention to use a light baffle in *Burrowes*, to prevent ambient light from affecting the measurements, thus improving the overall accuracy of the system.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Burrowes in view of Soar (U.S. 2004/0061044).

Regarding Claim 3, *Burrowes* teaches a code wheel but not a code strip. *Soar* teaches in Figure 1 that the reflective encoder (60) may be a code wheel or code strip. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a code strip in *Burrowes*, as taught by *Soar*, to measure a linear position of an object rather than an angular position of rotating shaft.

Claims 6-14, 17, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burrowes in view of Uebbing et al. (U.S. 5,317,149).

Regarding Claim 6, *Burrowes* does not teach whether the LED is encapsulated or not. *Uebbing* teaches in Figure 2 an optical encoder where the LED is encapsulated. It would have been obvious to one of ordinary skill in the art at the time of the invention to use an encapsulated LED in *Burrowes*, as taught by *Uebbing*, to have a smaller and less expensive integrated system.

Regarding Claim 7, both *Burrowes* and *Uebbing* teach that the emitter is an LED, but do not teach that it is packaged LED. It would have been obvious, however, to one of ordinary skill in the art at the time of the invention to use a packaged LED in *Burrowes* to stabilize the characteristics of the light source system (i.e. temperature control).

Regarding Claim 8, *Uebbing* teaches in Figure 2 that the encapsulation (2) forms an optical axis.

Regarding Claim 9, *Uebbing* teaches in Figure 2 that the light emitting diode (8) is mounted on the optical axis.

Regarding Claim 10, *Uebbing* teaches in Figure 4 that the light emitting diode (8) is mounted offset from the optical axis.

Regarding Claim 11, *Burrowes* in view of *Uebbing* does not teach that the LED includes a reflector cup. It would have been obvious, however, to one of ordinary skill in the art at the time of the invention to use a reflector cup in *Burrowes* to optimize the direction of light onto the coder and prevent loss.

Regarding Claim 12, see discussion on Claim 8.

Regarding Claim 13, see discussion on Claim 9.

Regarding Claim 14, see discussion on Claim 10.

Regarding Claim 17, *Burrowes* does not teach that the lens is incorporated into an encapsulation for the detector. *Uebbing* teaches in Figure 2 that the imaging lens (6) is incorporated into the encapsulation (2) of the detector (12). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the imaging lens into the encapsulation in *Burrowes*, as taught by *Uebbing*, to stabilize the alignment of the optical elements and provide a compact and integrated system.

Regarding Claim 21, *Burrowes* does not teach that the emitter (16) and the detector (22) are coplanar. *Uebbing* teaches in Figure 2 that the emitter (8) and the detector (12) are coplanar. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a particular emitter/detector arrangement (i.e. coplanar) in *Burrowes*, as taught by *Uebbing*, based on the reflective properties of the coder and the amount of available space for the device.

Regarding Claim 22, *Burrowes* does not teach that the emitter (16) and the detector (22) are mounted on a common substrate. *Uebbing* teaches in Figure 2 that the emitter (8) and the detector (12) are mounted on a common substrate. It would have been obvious to one of ordinary skill in the art at the time of the invention to mount the emitter and detector on a common substrate in *Burrowes*, as taught by *Uebbing*, to provide an integrated system and stabilize alignment.

Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burrowes in view of McQueen (U.S. 2002/0195550).

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Regarding Claim 18, *Burrowes* does not teach an aperture between the coder and the imaging lens. *McQueen* teaches in Figure 1 a code reading system comprising an aperture (110) between a coder (114) and an imaging lens (112). It would have been obvious to one of ordinary skill in the art at the time of the invention to use an aperture in *Burrowes*, as taught by *McQueen*, to adjust the depth of field for the device. (See *McQueen* paragraph [0041]).

Regarding Claims 19 and 20, see discussion on Claim 18. Although *McQueen* does not teach these specific aperture arrangements, it would have been obvious to one of ordinary skill in the art the time of the invention to use a particular aperture configuration to have an imaging device with certain focusing characteristics.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure because they teach various optical encoders systems comprising an emitter, detector, reflective coder, and a lens system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Davienne Monbleau whose telephone number is 571-272-1945. The examiner can normally be reached on Mon-Fri 9:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Danielle Monblanc
DNM

Stephane B. Allen
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Primary Examiner